

Application No. 10/536,477
Amendment Dated January 14, 2008
Reply to Office Action Dated August 27, 2007

Amendments to the Drawings

The attached sheet of drawings includes changes to Figure 5. This sheet 3/5, which includes Figure 4 and 5, replaces the original sheet 3/5 which includes figures 4 and 5. In Figure 5, the previously omitted item 9 has been added.

Attachments; Replacement Sheet

Annotated Sheet Showing Changes

Remarks

Claims 1-2, 4-11 and 13 are pending.

Claims 1-2, 4-11 and 13 stand rejected.

Claims 1, 2 and 7-11 have been amended.

Claims 4 and 13 have been cancelled without prejudice.

Claims 14-24 have been added.

Claims 1-2, 5-11 and 14-24 are submitted herein for review.

No new matter has been added.

In paragraph 1 of the Office Action, the Examiner has objected to the Figures and claim 9, because the optical collimator device having slits is not shown in the drawings. Applicants have amended Figure 5 and corresponding paragraph [0053] of the specification to show slits 9 in the collimator device. Such amendments to the specification and Figure 5 do not constitute new matter because the slits 9 in collimator device 8 were adequately described in the application as filed in both originally filed claim 9, and paragraph [0018] (beginning on line 21 of page 3) of the specification. In view of these amendments, Applicants request that these objections be withdrawn.

In paragraph 2 of the Office Action, the Examiner has objected to the title of the application for being non-descriptive. Applicants have amended the title to read "An improved optical flow meter," and respectfully request that this objection be withdrawn.

In paragraphs 4 and 6 of the Office Action, the Examiner has issued several technical rejections of the claims under 35 U.S.C. § 112. Applicants have amended or cancelled the claims accordingly and respectfully request that these rejections be withdrawn. Applicants note that the rotating target is a partial disc, meaning that it is a

disc that is an incomplete circle. In particular, the rotating target is an incomplete circle that is formed in the range of 45° to 225° of a complete circle. Furthermore, the rotating target, which is a partial disc, is made from an opaque material.

Turning to the substantive rejections, the Examiner has rejected the claims under 35 U.S.C. § 103(a) as being unpatentable over Bashem et al. (U.S. Patent No. 4,345,480) in view of Ohmura et al. (U.S. Patent Publication No. 2004/0004181). In particular, the Examiner argues that Bashem teaches all of the elements of the present invention except for the mirrors, but that such an element is shown in Ohmura and that it would have been obvious to combine the teachings of these references to arrive at the present invention as claimed.

Applicants disagree with the Examiner and submit the following remarks in response.

The present invention as claimed in independent claim 1 is directed to an optical detector device for a meter having a consumption indicator formed of a rotating target which is a partial disc formed in the range of 45° to 225° , where the disc is made of an opaque material. The optical detector device has first and second optical emitter elements for emitting first and second beams of light as well as first and second mirrors for reflecting said first and second beams of light respectively, such that the reflected first and second beams of light are both directed through a pathway of the rotating target to only one optical receiving element.

An optical signal is formed by the receiving of the first and second beams of light, processed to infer at least the number of rotations of the rotating target. The first and second optical emitters and the optical receiving element are substantially linearly arranged with the optical receiving element between the first and second optical emitter elements.

Such an arrangement, by placing the first and second emitters and the receiving element in a linear manner, allows for the overall dimensions of the optical detector device to be limited in size.

The cited Bashem reference teaches an optical detector device for a bore hole flow meter. The indicator includes a rotating element 46 and two emitters 43A and 44A where the processing of the beams emitted by the two emitter is used to measure the number of rotations of element 46.

The cited Ohmura reference teaches a photoelectric rotary encoder that includes a rotating element 6 with a pattern 24. Beam 101 is emitted into a returning section 5 that reflects the beam back to a photodetector 12.

However, there is no teaching or suggestion in either the Basham or in Ohmura, either alone or in combination with one another, that disclose the first and second optical emitters and the optical receiving element being substantially linearly arranged with the optical receiving element between the first and second optical emitter elements.

For at least this reason, Applicants submit that the cited prior art does not show all of the elements of independent claim 1, and respectfully request that the rejection of this claim be withdrawn. Likewise, as claims 2 and 5-11 depend from claim 1, these claims should be allowed for at least the same reason.

Turning to new independent claim 14, this claim also is directed to an optical detector device for a meter having a consumption indicator formed of a rotating target. The optical detector device has first and second optical emitter elements, first and second mirrors and an optical receiving element. An optical signal is formed by the receiving of beams of light from the emitters, processed to infer at least the number of rotations of the rotating target. The positioning of the optical emitters, optical receiving element and the first and second mirrors is such that the angle of incidence (B) of the first and second

beams of light emitted and then received by the optical receiving element is less than 60° .

There is no teaching or suggestion in either the Basham or in Ohmura, either alone or in combination with one another, that disclose the positioning of the optical emitters, optical receiving element and the first and second mirrors, such that the angle of incidence (B) of the first and second beams of light emitted and then received by the optical receiving element is less than 60° .

For at least this reason, Applicants submit that the cited prior art does not show all of the elements of independent claim 14, and respectfully request that the prior rejections not be carried over to this new independent claim. Likewise, as claims 15-19 depend from claim 14, these claims should be allowed for at least the same reason.

Regarding new independent claim 20, this claim also is directed to an optical detector device for a meter having a consumption indicator formed of a rotating target. The optical detector device has first and second optical emitter elements, first and second mirrors and an optical receiving element. An optical signal is formed by the receiving of beams of light from the emitters, processed to infer at least the number of rotations of the rotating target. The optical detector further includes a third optical emitter whose trace on the rotating target is centred on the axis of symmetry (A) of the rotating target, the rotating target is provided with a reflecting zone about this axis (A).

There is no teaching or suggestion in either the Basham or in Ohmura, either alone or in combination with one another, that disclose the optical detector further includes a third optical emitter whose trace on the rotating target is centred on the axis of symmetry (A) of the rotating target, the rotating target is provided with a reflecting zone about this axis (A).

For at least this reason, Applicants submit that the cited prior art does not show all of the elements of independent claim 20, and respectfully request that the prior rejections

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not be carried over to this new independent claim. Likewise, as claims 21-24 depend from claim 14, these claims should be allowed for at least the same reason.

In view of the foregoing, Applicants respectfully submit that pending claims 1-2, 5-11 and 14-24 are in condition for allowance, the earliest possible notice of which is earnestly solicited. If the Examiner feels that an interview would facilitate the prosecution of this Application they are invited to contact the undersigned at the number listed below.

Respectfully submitted,

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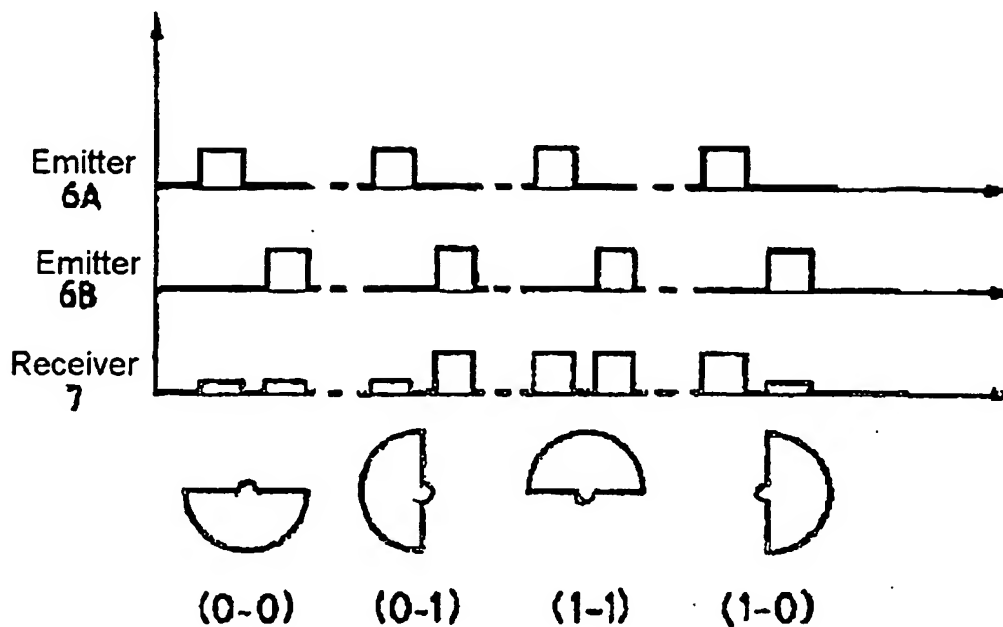
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APPENDIX



FIG_4



FIG_5

